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**PATENT APPLICATION  
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**SYSTEM AND METHOD FOR PRINTING FROM A WEB APPLICATION**

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2 SYSTEM AND METHOD FOR PRINTING FROM A WEB APPLICATION

3 The present invention generally relates to an improved method  
4 and system for printing from a web application. More specifically, it relates to  
5 an improved system and method for printing target data from a web application  
6 used through a browser of a client computer that is operatively connected to a  
7 web server providing the web application.

8 The use of web applications has been growing over the years as  
9 the Internet gets more sophisticated. Because most web applications are  
10 designed to work with cross-platform browsers, they operate independently  
11 from the operating system ("OS"). In other words, most web applications can  
12 work with any operating systems, such as LINUX®, WINDOWS®, or  
13 MACINTOSH®. As such, web applications are becoming an extremely  
14 powerful tool on the Internet. Currently, most web pages from the web

1 application are printed through the functionality of the web browser, which, in  
2 turn, makes use of the underlying operating system. However, printing from  
3 browsers is known to frequently produce bad results. The printed documents  
4 typically match the display page on the browser, which is optimized for  
5 viewing rather than printing and often creates undesired results. Furthermore,  
6 as a result of numerous browsers that are currently being used, the printing of  
7 web pages varies greatly from browser to browser, resulting in inconsistent  
8 printing.

9 Consequently, there are current web applications that provide a  
10 means of generating printable data from the web applications themselves in an  
11 attempt to provide information optimized for printing to overcome the printing  
12 problems caused by the browser. Adobe Acrobat is a widely available web  
13 browser plug-in designed to read, display and print Portable Document Format  
14 ("PDF") files from within a web browser. As a result of being integrated into  
15 the browser, the user can preview the print output. However, there are still  
16 limitations. Although the plug-ins, such as Adobe Acrobat, give users  
17 previews of their print output, they do not provide a preview of the print output  
18 in the context of the peripheral devices and/or services. The print output  
19 displayed is simply a preview of the document with the formats that are set up  
20 in the document, which may look different when the features or limitation of  
21 the peripheral devices are added.

## 22 BRIEF SUMMARY OF THE INVENTION

23 The present invention is directed to an improved system and  
24 method for printing target data from a web application. More particularly, the  
25 system and method for printing target data from a web application used by a

1 browser of a client computer that is operatively connected to a web server  
2 providing said web application.

3 The present invention provides a system that includes a client  
4 computer having a browser for using the web application, a web server for  
5 providing the web application, a web application content for providing the web  
6 application on the browser, and a print destination server specified by the user  
7 for printing the target data. The web application content further directs the  
8 browser to the print destination server responsive to user print selection.

9 The present invention also provides a method that includes the  
10 steps of sending a web application content by the web server to the browser  
11 responsive to a request for web content by the browser, sending an URL  
12 request for printing the target data responsive to user print selection on the web  
13 application content, directing the browser to a print destination server indicated  
14 by the URL request by the web application content, and printing the target data  
15 according with user specified print configuration by the print destination  
16 server.

17 The present invention further provides another method that  
18 includes the steps of sending a web application content by a web server to a  
19 browser responsive to a request for web content by the browser, sending a URL  
20 request for printing the target data to the web server responsive to user print  
21 selection on web application, constructing imaging data for the target data  
22 responsive to the URL request, storing the imaging data to a personal imaging  
23 repository, and printing the imaging data in accordance with a print  
24 configuration specified by the print destination server.

25 The present invention further provides another method that  
26 includes the steps of requesting to print the imaging data from the web  
27 application to a print destination server by the browser, transferring imaging

1 data to a personal imaging repository by the web application responsive to the  
2 print request by the browser, and printing the imaging data by the print  
3 destination server. The personal imaging repository is an exchange  
4 infrastructure between the imaging data and available web services.

## 5 DESCRIPTION OF THE DRAWINGS

6 FIGURE 1 is an architectural diagram of a client-server network  
7 system in which the present invention can be implemented;

8 FIG. 2 is an architectural diagram of a second client-server  
9 network system in which the present invention can be implemented;

10 FIG. 3 is a flow chart illustrating the preferred functionality of the  
11 print method of the present invention;

12 FIG. 4 is a flow chart illustrating the preferred functionality of the  
13 transfer method of the present invention;

14 FIG. 5 illustrates an exemplary page of the target data for printing  
15 from the web application;

16 FIG. 6 illustrates an exemplary page of the print content from the  
17 print destination server;

18 FIG. 7 illustrates an exemplary page of the print content from the  
19 print destination server; and,

20 FIG. 8 illustrates an exemplary status page of the print content  
21 from the print destination server.

## 22 GLOSSARY OF TERMS AND ACRONYMS

23 The following terms and acronyms are used throughout the  
24 detailed description:

1 Client-Server. A model of interaction in a distributed system in  
2 which a program at one site sends a request to a program at another site and  
3 waits for a response. The requesting program is called the "client," and the  
4 program which responds to the request is called the "server." In the context of  
5 the World Wide Web (discussed below), the client is a "Web browser" (or  
6 simply "browser") which runs on the computer of a user; the program which  
7 responds to browser requests by serving Web pages, or other types of Web  
8 content, is commonly referred to as a "Web server."

9 Composition store. Composition store refers to a network service  
10 or a storage device for storing imaging composition(s) that can be accessed by  
11 the user or other web services.

12 Content. A set of executable instructions that is served by a  
13 server to a client and that is intended to be executed by the client so as to  
14 provide the client with certain functionality. Web content refers to content that  
15 is meant to be executed by operation of a Web browser. Web content,  
16 therefore, may non-exhaustively include one or more of the following: HTML  
17 code, SGML code, XML code, XSL code, CSS code, Java applet, JavaScript  
18 and C-"Sharp" code.

19 Exchange infrastructure. An exchange infrastructure is a  
20 collection of services distributed throughout a network that stores imaging data  
21 associated with a particular user through a user profile.

22 Hyperlink. A navigational link from one document to another,  
23 from one portion (or component) of a document to another, or to a Web  
24 resource, such as a Java applet. Typically, a hyperlink is displayed as a  
25 highlighted word or phrase that can be selected by clicking on it using a mouse  
26 to jump to the associated document or document portion or to retrieve a  
27 particular resource.

Hypertext System. A computer-based informational system in which documents (and possibly other types of data entities) are linked together via hyperlinks to form a user-navigable "web."

Imaging composition. An imaging composition comprises links to imaging data serviced as a single unit.

Imaging data. Imaging data refers to digital data capable of being represented as two dimensional graphics, such as a Portable Document Format ("PDF") file or a Joint Photographic Experts Group ("JPEG") file.

Imaging data store. Imaging data store refers to a network service or a storage device for storing imaging data that can be accessed by the user or other network services. The imaging data store preferably accepts the imaging data in multiple standard file formats, and the imaging data is converted into these file formats when necessary depending on the implementation.

Internet. A collection of interconnected or disconnected networks (public and/or private) that are linked together by a set of standard protocols (such as TCP/IP and HTTP) to form a global, distributed network. (While this term is intended to refer to what is now commonly known as the Internet, it is also intended to encompass variations which may be made in the future, including changes and additions to existing standard protocols.)

World Wide Web ("Web"). Used herein to refer generally to both (i) a distributed collection of interlinked, user-viewable hypertext documents (commonly referred to as Web documents or Web pages) that are accessible via the Internet, and (ii) the client and server software components which provide user access to such documents using standardized Internet protocols. Currently, the primary standard protocol for allowing applications to locate and acquire Web documents is HTTP, and the Web pages are encoded using HTML.

1 However, the terms "Web" and "World Wide Web" are intended to encompass  
2 future markup languages and transport protocols which may be used in place of  
3 (or in addition to) HTML and HTTP.

4 Web Site. A computer system that serves informational content  
5 over a network using the standard protocols of the World Wide Web.  
6 Typically, a Web site corresponds to a particular Internet domain name, such as  
7 "HP.com," and includes the content associated with a particular organization.  
8 As used herein, the term is generally intended to encompass both (i) the  
9 hardware/software server components that serve the informational content over  
10 the network, and (ii) the "back end" hardware/software components, including  
11 any non-standard or specialized components, that interact with the server  
12 components to perform services for Web site users. Importantly, a Web Site  
13 can have additional functionality, for example, a Web site may have the ability  
14 to print documents, scan documents, etc.

15 HTML (HyperText Markup Language). A standard coding  
16 convention and set of codes for attaching presentation and linking attributes to  
17 informational content within documents. (HTML 2.0 is currently the primary  
18 standard used for generating Web documents.) During a document authoring  
19 stage, the HTML codes (referred to as "tags") are embedded within the  
20 informational content of the document. When the Web document (or HTML  
21 document) is subsequently transferred from a Web server to a browser, the  
22 codes are interpreted by the browser and used to display the document.  
23 Additionally in specifying how the Web browser is to display the document,  
24 HTML tags can be used to create links to other Web documents (commonly  
25 referred to as "hyperlinks"). For more information on HTML, see Ian S.  
26 Graham, The HTML Source Book, John Wiley and Sons, Inc., 1995 (ISBN  
27 0471-11894-4).



1 HTTP (HyperText Transport Protocol). The standard World  
2 Wide Web client-server protocol used for the exchange of information (such as  
3 HTML documents, and client requests for such documents) between a browser  
4 and a Web server. HTTP includes a number of different types of messages  
5 which can be sent from the client to the server to request different types of  
6 server actions. For example, a "GET" message, which has the format GET  
7 <URL>, causes the server to return the document or file located at the specified  
8 URL.

9 URL (Uniform Resource Locator). A unique address which fully  
10 specifies the location of a file or other resource on the Internet or a network.  
11 The general format of a URL is protocol://machine address:port/path/filename.

12 User Information. User information is identification and security  
13 information used in accessing imaging composition(s) and imaging data  
14 associated with a particular user profile. It is preferably accessed either  
15 directly or indirectly through methods provided by an extension component  
16 integrated into the web browser.

17 PDA (Personal Digital Assistant). A small hand-held computer  
18 used to write notes, track appointments, manage email and browse the web,  
19 generally with far less storage capacity than a desktop computer.

20 Personal imaging repository. A personal imaging repository is a  
21 conceptual term describing the exchange infrastructure used to exchange  
22 imaging composition and imaging data with web services. Users are associated  
23 with their imaging data through user profiles.

## 24 DETAILED DESCRIPTION

25 Broadly stated, the present invention is directed to an improved  
26 system and method for printing from a web application. The system and

1 method provide printing from a web application that is independent of the  
2 configuration of the operating system. In addition, since the print destination  
3 server can return with specific print content that relates to a selected device, the  
4 present invention allows a preview of the print job in the context of the devices  
5 and/or services offered by the print destination server.

6 The client-server network system in which the present invention  
7 can be implemented is shown in FIG. 1 and indicated generally at 10. A client  
8 machine 12 is connected to a first server machine 14 and a second server  
9 machine 16 via the Internet 18. The client machine 12 includes a browser 20  
10 and, preferably, a personal imaging repository 22. The browser 20 further  
11 includes an extension component (extension) 24 for accessing user information  
12 26, which provides an interface between content executing in the browser 20  
13 and the personal imaging repository 22. More specifically, the user  
14 information 26 is used for associating user profiles to their own personal  
15 imaging repository. It should be noted that the user profile can associate  
16 different users or groups to the personal imaging repository. For example, the  
17 user profile can associate a single user to a particular personal imaging  
18 repository, but, at the same time, this user can also have multiple user profiles,  
19 resulting in multiple personal imaging repositories associated to a single user.  
20 Alternatively, the user profile can associate a group having multiple users to a  
21 particular personal imaging repository. The personal imaging repository, in  
22 this scenario, can be used by a group having a common association, such as a  
23 group project. As described, the user profile can be defined with great  
24 discretion and flexibility, and these other implementations are contemplated  
25 and within the scope of the present invention.

26 The browser uses a web application content 28 that is provided  
27 by a web server 30. When the user selects print in the web application content,

1 the web server 30, among other things, directs the browser 20 to the print  
2 destination. Although one client machine 12 and two server machines 14, 16  
3 are shown as examples, the preferred implementation would likely involve  
4 many server machines to which the client machine has access and can  
5 communicate. For better readability, "a" client machine or server machine will  
6 be sometimes referred to. However, it should be understood that the use of "a"  
7 also refers to "one or more".

8 The first server machine 14 includes a first server 34. When the  
9 browser 20 is directed to the first server 34 indicated by a Uniform Resource  
10 Locator ("URL"), a first content 36 is served by the first server to the browser  
11 20. Each content 36 is preconfigured with specific instructions depending on  
12 the type of service the server machine provides. Similarly, the second server  
13 machine 16 includes a second server 38 with a second content 40. Generally,  
14 the contents 36, 40 are likely different, because the services and/or access to  
15 devices provided by the servers are different. In this example, the first server  
16 machine 14 is connected to a single printing device 42, whereas the second  
17 server machine serves multiple printing devices 44. Consequently, the first  
18 content 36 and second content 40 will be very different, each including  
19 separate instructions to the browser 20.

20 Although it is shown that the servers only represent printing  
21 devices in this example, the server can provide other services. For example,  
22 the server can be an auction web site, such as ebay.com, which makes an  
23 auction page for the user when a graphic file is printed to the web site. As one  
24 can see, the type of services and/or devices the servers can offer is limitless. In  
25 the present invention, the user can "print" to any one of services. As a result,  
26 the use of the word "print" is intended to be given a very broad definition,  
27 which can be used with many available devices or services. Whatever the

1 services and/or device the servers provide, the content can include the  
2 instructions needed for the configuration. Given the wide usage of the present  
3 invention, it is preferred that a personal imaging repository 22 be implemented  
4 with the present invention, which stores data that can be accessed by these  
5 servers.

6 In the preferred embodiment, the personal imaging repository 22  
7 includes a composition store 46 for storing imaging composition(s) of the  
8 imaging data that are serviced as a single unit and an imaging data store 48,  
9 i.e., digital memory, for storing the imaging data. An imaging composition  
10 preferably comprises links to the imaging data, which can be located at another  
11 service. As a result, the composition store 46 stores only the imaging  
12 compositions. The imaging data store 48, on the other hand, is any imaging  
13 data store located on any computer that contains the imaging data. More  
14 specifically, each web service can have its own imaging data store 48 available  
15 to the public.

16 For example, at some earlier time, a user may print an article  
17 from a web service site, resulting in an imaging composition being created and  
18 stored in the user's composition store 46. The imaging composition contains  
19 only the link to the imaging data for this article stored on the web service site  
20 36. Consequently, the imaging data for the article is not in the imaging data  
21 store 48 located on the client machine 12. Rather, the imaging data is stored in  
22 the imaging data store 48 located on the web service site. Of course, users will  
23 have an imaging data store 48 that belongs to their user identification where  
24 they can store imaging data, which is the imaging data store shown in the client  
25 machine 12. As a result, the term "personal imaging repository" 22 is meant as  
26 a conceptual term for an exchange infrastructure between the imaging data and  
27 the available web services on the Internet. Similarly, the term "web" denotes

1 millions of distinct servers that comprise the web. However, the web does not  
2 actually do anything itself. In the present invention, the servers serving the  
3 composition store 46 and the imaging data store 48 are physical  
4 implementations of the personal imaging repository as a concept.

5 It should be noted that the personal imaging repository 22 can  
6 represent any type of data storage device. In fact, the data storage device 22  
7 does not necessarily have to be located with the client machine 12. The  
8 personal imaging repository 22 can be located, for example, on another  
9 machine, which the client machine can access through the Internet. Although it  
10 is preferred currently to include the personal imaging repository 22 with the  
11 client machine 12, this would likely change as the bandwidth becomes faster  
12 and the popularity of the personal digital assistant ("PDA") increases. These  
13 alternative implementations should be considered to be within the scope of the  
14 present invention. One preferred embodiment that is more tailored to faster  
15 bandwidth or any client machine with limited storage capacity is shown in FIG.

16 2.

17 A second client-server network system is shown in FIG. 2, and  
18 indicated generally at 60. In this implementation, multiple users 62, 64 can  
19 utilize the same client machines 66 through the Internet 68. In this  
20 implementation, the client machines 66 can include client computers that have  
21 less storage memory, such as a Personal Digital Assistant ("PDA") or a laptop.  
22 Because of the limit on the storage memory, the personal imaging repository 70  
23 for storing user's data 72 is located on a second computer 74, which can also be  
24 a server computer or just a linked client machine 66. In this example, the  
25 second computer 74 is a server, which will be herein referred to as a store  
26 server to distinguish it from the servers for printing. Users 62, 64 are assigned  
27 different user profiles for accessing the personal imaging repository 70 through

1 the store server 74. Although not shown, the personal imaging repository 70  
2 can similarly be implemented with a composition store and an imaging data  
3 store, where the data 72 can be stored.

4 Preferably, a first user 62 initially accesses the system 60 with a  
5 login name and password. Once the first user 62 has access to the system 60,  
6 the first user then also has access to the personal imaging repository 70 that is  
7 linked to this first user's login name. Similarly, if a second user 64 logs in with  
8 a login name and password, the second user has access to the system 60,  
9 including the personal imaging repository 70 that belongs to this second user's  
10 login name. In this implementation, users can access the system 60 and their  
11 personal imaging repository 70 from any computers that have a browser and  
12 Internet access. As a result of the flexibility of the Internet, it is possible for  
13 users to access the system 60 and their personal imaging repository 70 using a  
14 standard PDA and/or wireless web phone.

15 A web application content 76 can be used by the users through a  
16 browser 78 that is located on the client machine 66. Similar to the previous  
17 implementation, the web application content 76 is provided through a web  
18 server 80. The browser 78 also contains an extension 84 for accessing the user  
19 information 86, 87 that associate the different user profiles assigned to the  
20 users 62, 64 to the personal imaging repository. As shown, each user profile  
21 has its own user information. Alternatively, the user information can also  
22 contain information for both of the user profiles. These other variations are  
23 contemplated and are within the scope of the present invention.

24 Users can access a variety of servers on the Internet for the  
25 printing of the target data from the web application content 76. In this  
26 example, there is a first server 88 and a second server 90. The first server 88  
27 provides a first print content 92 representing a single printing device 94, and

1 the second server 90 provides a second print content 96 representing a plurality  
2 of printing devices 98.

3 Turning to an important aspect of the present invention, a flow  
4 chart of the preferred functionality of the print method is shown in FIG. 3, and  
5 indicated generally at 100. Upon the user selecting PRINT or PRINT  
6 PREVIEW on the web application content (block 102), the web application  
7 content first creates a URL request (block 104), which is sent to the web server  
8 (block 106). Shown as an example in FIG. 5, a user creates a document using  
9 the web application, and, from the web application, the users can select to  
10 PRINT the document (i.e., the target data) to a specific URL (i.e., the print  
11 destination).

12 In response to the URL request, the web server constructs an  
13 imaging data of the target data (block 108). However, the step of constructing  
14 the imaging data can also be done by other components, such as the web  
15 application content. The implementations of performing these steps are meant  
16 to be flexible depending on the chosen configuration of network system. These  
17 alternative implementations are contemplated and are within the scope of the  
18 present invention.

19 An imaging data generally refers to digital data capable of being  
20 represented as two dimensional graphics of the target data, which might not  
21 look the same as the target data depending on the behavior of the web  
22 application. This step of constructing an imaging data may not be necessary,  
23 and this depends on the implementation and configuration of the print  
24 destination. For example, if you are sending a graphic file to the earlier  
25 example of an auction site for making an auction page with the graphic file, an  
26 imaging data might not have to be generated in this case. Instead, the print  
27 destination server would take the target data without further modification for

1 compatibility. However, since it is hard to foresee what type of graphic files  
2 the web site will accept, the preferred method is implemented with this step of  
3 constructing imaging data to guarantee uniformity and compatibility. The  
4 preferred format for the imaging data is preferably JPEG, Graphics Interchange  
5 Format ("GIF"), Portable Network Graphics Format, Tagged Image File  
6 Format ("TIFF"), PDF and Microsoft Windows bitmap format ("BMP").

7 After the web server constructs the imaging data for the target  
8 data (block 108), the web application content transfers the imaging data to the  
9 personal imaging repository (block 110). It is then determined whether the  
10 personal imaging repository is located on the client computer or the store server  
11 (block 112). If the personal imaging repository is located on the client (block  
12 112), the imaging data is saved to the repository without further connection  
13 (block 114). If, however, the repository is located on the store server (block  
14 112), the client machine will connect to the store server (block 116). It is then  
15 determined whether the connection is successful before the timeout (block  
16 118), and the client machine will keep trying to connect to the store server until  
17 a timeout or connection is successful (block 116). Once the connection with  
18 the store server is successful (block 118), the client transfers the imaging data  
19 to the store server (block 120) for storage in the personal imaging repository  
20 (block 114).

21 After the imaging data is stored in the personal imaging  
22 repository (block 114), the web application content directs the browser to the  
23 server indicated by the print destination (block 122), which will be referred to  
24 as the print destination server. It is next determined whether the print  
25 destination server is available for printing (block 124). An error message is  
26 sent to the user (block 126) if the print destination server is not available (block  
27 124). If, on the other hand, the print destination server is available (block 124),



1 it will respond to the browser by returning a print content (block 126), which  
2 will be displayed on the browser for user configuration (block 128). The print  
3 content is generally a web page that is designed according to the services that  
4 this print destination provides. Furthermore, there are a number of ways to  
5 implement the print content depending on the services available. For example,  
6 the print content can be configured to display a list of imaging data stored the  
7 personal imaging repository. In this scenario, the print content will access the  
8 personal imaging repository to obtain the list for display to the user. These  
9 other variations are contemplated and should be considered within the scope of  
10 the present invention.

11 As an example, if the print destination server provides multiple  
12 printing devices, a page of the print content may contain all the printing devices  
13 that are available for user selection (shown in FIG. 6). From this page of the  
14 print content, the user selects a printing device, another page will be returned to  
15 the user with the imaging data and the configurations that are available for this  
16 particular printing device (shown in FIG. 7). Through the print content, the  
17 user is able to print or print preview the imaging data according to the  
18 configurations of the printing devices (shown in FIG. 7). In the auction site  
19 example, the users can preview the auction page that they configured before  
20 posting onto the auction list. As shown, the print content can be returned with  
21 multiple pages depending on the need of the services provided by the print  
22 destination server.

23 Once the user configuration is finalized, the user can then select  
24 to PRINT or PRINT PREVIEW from the print content (block 130). The print  
25 content accesses the imaging data from the personal imaging repository (block  
26 132), and transfers the imaging data with the specified user configuration to the  
27 print destination server (block 134), in which the imaging data is printed or

1 displayed according to the specified configurations including the selected  
2 printing device (block 136). At the end, the print content can return a status  
3 page to indicate successful output to the printing device (shown in FIG. 8).

4 The preferred functionality of the store method is shown in FIG.  
5 4, and indicated generally 150. The store method is initiated by the step of  
6 storing imaging data in the personal imaging repository (block 114) first shown  
7 in FIG. 3. The web application content first logs into the imaging data store  
8 service (block 152). At this point, it is determined whether the connection to  
9 the imaging data store is successful (block 154), and if not, an error message is  
10 sent to the user (block 156). Once it is established that a connection to the  
11 imaging data store is successful (block 154), the web application content  
12 preferably converts the imaging data into a predefined format, such as JPEG,  
13 (block 158). It is preferred that a predefined format and a conversion step for  
14 the predefined format are included, however, the present invention can also be  
15 implemented without the predefined format. In fact, the implementation of the  
16 personal imaging repository is not limited to the composition store and the  
17 imaging data store. There are numerous ways to implement the personal  
18 imaging repository. As a result, the transfer method can be implemented in  
19 various ways depending on the physical implementation of the personal  
20 imaging repository, and these various methods are within the scope of the  
21 present invention.

22 After the imaging data is in the predefined format (block 158), it  
23 is transferred to the imaging data store by the web application content (block  
24 160). The web application content next obtains a reference to the transferred  
25 imaging data stored in the imaging data store (block 162), and logs out of the  
26 imaging data store (block 164) and log into the composition store (block 166).  
27 It is then determined whether the connection to the composition store is

1 successful (block 168). An error message is sent to the user (block 170) if the  
2 connection was unsuccessful (block 168). After a successful connection to the  
3 composition store (block 168), the web application content creates an imaging  
4 composition (block 172) and adds the reference to the imaging data stored in  
5 the imaging data store obtained earlier in the imaging composition (block 174).  
6 This newly created imaging composition is then saved to the composition store  
7 (block 176), and makes the imaging composition the selected composition in  
8 the composition store (block 178). Because the imaging composition is set as  
9 the selected composition, it will be used by web services that make use of the  
10 selected composition of the personal imaging repository. Finally, the web  
11 application content logs out of the composition store (block 180), which brings  
12 the method to an end (block 182).

13               It should be noted that the order of the methods can be varied and  
14 changed depending on the implementation of the present invention. An  
15 alternative method is logging into either one of the stores, and upon successful  
16 connection, the requested web service then immediately logs into the other  
17 store prior to performing any further steps. More specifically, for example, the  
18 requested web service can first log into the imaging data store. Upon a  
19 successful connection with the imaging data store, the requested web service  
20 next logs into the composition store. Once it is established that the requested  
21 web service has successfully logged into both the imaging data store and the  
22 composition store, only then would the remaining steps be processed. This  
23 alternative method ensures that the imaging data is not unnecessarily  
24 transferred to the imaging data store when an imaging composition of the  
25 transferred imaging data can not be added to the composition store due to a  
26 connection failure. This method is especially preferred when the composition

1 store resides on a separate location other than the imaging client as shown in  
2 FIG. 2.

3 From the foregoing description, it should be understood that an  
4 improved system and method for printing target data from a web application  
5 has been shown and described, which has many desirable attributes and  
6 advantages. The system and method provides printing from a web application  
7 that is independent of the configuration of the browser. Furthermore, because  
8 the print destination server can return with specific print content that relates to  
9 a selected device or services, the present invention allows a preview of the print  
10 job in the context of the devices and/or services offered by the print destination  
11 server. This is extremely helpful, since the print content can be designed in  
12 such a way that the services offered by the print destination server are also  
13 independent of the operating system, which allows for greater flexibility with  
14 fewer limitations.

15 While various embodiments of the present invention have been  
16 shown and described, it should be understood that other modifications,  
17 substitutions and alternatives are apparent to one of ordinary skill in the art.  
18 Such modifications, substitutions and alternatives can be made without  
19 departing from the spirit and scope of the invention, which should be  
20 determined from the appended claims.

21 Various features of the invention are set forth in the appended  
22 claims.